plateau resources LIMITED

General Office: 772 Horizon Drive, Grand Junction, CO 81501 (303) 245-5460
Corporate Office: 212 West Michigan Avenue, Jackson, MI 49201 (517) 788-1942
Registered Office: 136 South Main, Salt Lake City, UT 84101 (801) 534-0734

Route to Susan then file Tony M. ACT/017/00

October 12, 1981

Mr. Thomas N. Tetting
State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Dear Tom:

Enclosed are the photos of the Tony M Mine test plots that I told you I would get for you. The photos were taken the last week of September, 1981 just after the drip irrigation system was installed.

The plots will be irrigated this fall and next year. My initial reaction to the drip irrigation system is that it may prove to be very troublesome, but we will try it anyway because of our investment in labor and equipment. We will keep you informed of our findings in the annual progress reports.

The photos are numbered on the back and show the following:

#1 -- Area above test plots. In foreground is the irrigation system filter and main lines.

#2 -- View of the northern part of test plots taken from above. Slope plots are in foreground; level plots are in the background. Rebar is used to mark off the subplots.

#3 -- Taken from same point as #2; shows remainder of plots.

#4 -- View from below the test plots showing the sloped plots. A portion of the level plots can be seen at far left.

If you have any questions, please contact me.

Sincerely,

Fred W. Gerdeman

Fred W. Gerdeman

Enclosures: 4

SOIL CONSERVATION SERVICE

PLANT MATERIALS TEST PLOTS, 1981

2.0 S.C.S. Plant Materials Test Plots

The location and layout of the three plant materials test plots planted in conjunction with the Soil Conservation Service are indicated on the maps accompanying this report.

Seed for the tests was supplied by the SCS through the Plant Materials Center in Los Lunas, New Mexico with the exception of one of the trials of fourwing saltbush, for which the seed was collected locally.

The species and seeding rates used were:

Indian ricegrass (Nezpar)	Orzyopsis hymenoides	7 lbs/acre
Indian ricegrass (Poloma)	Oryzopsis hymenoides	7 lbs/acre
Galleta grass (Viva)	Hilaria jamesii	6 lbs/acre
Cochise lovegrass	Eragrostis atherstonel	2 lbs/acre
Weeping lovergrass	Eragrostis curvula	2 lbs/acre
Voluga wildrye	Elymus giganteus	10 lbs/acre
Black grama (Nogal)	Bouteloua gracilis	1 lb/acre
Fourwing saltbush (Aberdeen)	Atriplex canescens	16 lbs/acre
Fourwing saltbush (local)	Atriplex canescens	16 lbs/acre
Alfalfa (A-20867)	Medicago sativa	4 lbs/acre

Study areas were planted in the early spring of 1981. After the areas for the plots were cleard and the plots staked, seed was broadcast in the designated plots at the above rates. The plots were then hand raked to cover the seed. Fences were constructed around each of the areas to keep livestock off of the plots.

Progress of the plots was monitored at the beginning of each month. Following is a synopsis of the early progress of the study areas.

Ticaboo Plots

March, 1981	Weeping lovegrass germinated
April, 1981	Alfalfa germinated
May, 1981	Poloma Indian ricegrass and Galleta germinated; Weeping lovegrass is 2.5 inches tall

Temporary Topsoil Plots

March, 1981	Weeping lovegrass germinated
April, 1981	Alfalfa germinated
May, 1981	Voluga wildrye and Galleta and Poloma Indian ricegrass germinated

Borrow Area C Plots

March, 1981 Weeping lovegrass germinated

May, 1981 Alfalfa and Poloma Indian ricegrass and Galleta germinated

None of the seeded species that germinated survived the summer. As of December, 1981 the plots are all barren of any but invading species. The current status of the plots is indicated on the attached sampling sheets.

Precipitation Data for 1981

January	0.06"	July	0.53"
February	0.25	August	0.32
March	1.92	September	1.00
April	0.23	October	2.13
May	1.04	November	0.69
June	0.00		

SCS Plant Materials Plots - Sampling Sheet

		% Ground cover/species present	Notes
	1		
Nezpar Indian ricegrass		5% snakeweed	
	2		
4-Wing saltbush (Aberdeen)		2% snakeweed	
	3		
Galleta (Viva)		2% snakeweed	
	4		
Cochise lovegrass		1% snakeweed	
	5		
Blackgrama (Nogal)		1% snakeweed	
	6		
Voluga wildrye		1% snakeweed	
	7		
Control		1% snakeweed	
	8		
Poloma Indian ricegrass			
	9		
4-Wing saltbush (local)		1% snakeweed	
	10		
Weeping lovegrass (A-67)			
	11		
Alfalfa (A-20867)			
	12		
Combination			

TDI - plot 1 is to the south
TTS - plot 1 is to the south
Area C- plot 1 is to the west

Location: Borrow Area C
Date: 12/14/81
Sampled by:

Figure 2.1

SCS Plant Materials Plots - Sampling Sheet

		% Ground cover/species present	Notes
	1		
Nezpar Indian ricegrass		15% thistle	
	2		
4-Wing saltbush (Aberdeen)		15% thistle	
	3		
Galleta (Viva)		10% thistle	
	4		
Cochise lovegrass		15% thistle	
	5		
Blackgrama (Nogal)		10% thistle	
	6		
Voluga wildrye		10% thistle	
	7		
Control		15% thistle	
	8		
Poloma Indian ricegrass		15% thistle	
	9		
4-Wing saltbush (local)		15% thistle	
	10		
Weeping lovegrass (A-67)		10% thistle	
	11		
Alfalfa (A-20867)		10% thistle	
	12		
Combination		10% thistle	

TDI - plot 1 is to the south
TTS - plot 1 is to the south
Area C- plot 1 is to the west

Location: Temp. Topsoil Stockpile
Date: 12/14/81
Sampled by:

Figure 2.2

SCS Plant Materials Plots - Sampling Sheet

		% Ground cover/species present	Notes
	1		
Nezpar Indian ricegrass		_____	plots are bare
	2		
4-Wing saltbush (Aberdeen)		_____	
	3		
Galleta (Viva)		_____	
	4		
Cochise lovegrass		_____	
	5		
Blackgrama (Nogal)		_____	
	6		
Voluga wildrye		_____	
	7		
Control		_____	
	8		
Poloma Indian ricegrass		_____	
	9		
4-Wing saltbush (local)		_____	
	10		
Weeping lovegrass (A-67)		_____	
	11		
Alfalfa (A-20867)		_____	
	12		
Combination		_____	

TDI - plot 1 is to the south
TTS - plot 1 is to the south
Area C- plot 1 is to the west

Location: Ticaboo Townsite
Date: 12/14/81
Sampled by:

Figure 2.3

Test Plots
Borrow Area A

3.0 Introduction

A small portion (about 0.1 acres) of the disturbed area at Aggregate Borrow Area A was reserved for use as test plots. Two sets of plots were set out. One is a test of several treatments in conjunction with the seed mix used in reclamation of disturbed sites at the mill. The other is a set of trials for several species which were seeded in the plots. Some of the seeds were obtained from the Soil Conservation Service in Panguitch, Utah and are the same seeds used by the SCS in their plant materials tests on other Plateau Resources properties. Other seed is from the Reclamation Department's stock of seed.

3.1 Treatment

This experiment was designed to test for differences between six cultural treatments as they effect establishment of vegetation. The treatments are as follows:

1. control
2. fertilizer
3. Jacklins Organic Mulch
4. straw mulch
5. fertilizer + straw mulch
6. fertilizer + Jacklins Organic Mulch

Application rates were as follows,

NPK fertilizer: 12-12-12 fertilizer was broadcast at a rate of 625 lbs/ac. This supplied 75 lbs/ac N, 75 lbs/ac P_2O_5, and 75 lbs/ac K_2O. In addition, 13.9 lbs/ac of $ZnSO_4$ (5 lbs/ac Zn) was applied to the fertilized plots. These fertilizer rates were based on recommendations from the Colorado State University Soil Lab.

Jacklins Organic Mulch: Jacklins was applied at a rate of 1 1/2 tons/ac, in accordance with company recommendations.

Straw Mulch: Straw was spread at a rate of approximately 1 1/2 tons/ac; the same rate used on disturbed mill sites by the Reclamation Department.

The seed mix for the plots is the same one used on disturbed mill sites by the Reclamation Department which is as follows:

Indian ricegrass (Oryzopsis hymenoides)	2.00 lbs/ac
Alkalai sacaton (Sporobolus airoides)	1.00 lbs/ac
Sand dropseed (S. cryptandrus)	1.00 lbs/ac
Beardless blue bunch wheatgrass (Agropyron spicatum inerme)	1.00 lbs/ac
Siberian wheatgrass (A. sibericum)	1.00 lbs/ac

Pubescent wheatgrass (A. trichophorum)	1.00 lbs/ac
Western wheatgrass (A. smithii)	1.00 lbs/ac
Fourwing saltbush (Artiplex canescens)	2.50 lbs/ac
Shadscale saltbush (A. confertifolia)	2.00 lbs/ac
Douglas rabbitbrush (Chrysothamnus viscidiflorus)	0.50 lbs/ac
Yellow sweetclover (Melilotus officinalis)	0.25 lbs/ac

3.2 Plot Preparation

The plots were set out on a very slightly sloping area with a westerly exposure. Each plot is 3 x 5 meters. The site was disturbed to obtain aggregate for the tailings impoundment dam in early 1981. Recontouring was completed in March, 1981. The site of the plots was covered by approximately 10-12 inches of stockpiled topsoil.

The plots were treated and seeded on December 22, 1981. The soil was moist at that time and there had as yet, been no sustained periods of cold temperatures.

Fertilizer and Jacklins Organic Mulch were broadcast over the appropriate plots, which were then hand raked to incorporate the ammendments into the soil and to prepare a seedbed. All other plots were also raked at this time to prepare a seedbed. Seed was then broadcast over all of the plots which were hand raked again, to cover the seed. Straw was spread on those plots requiring this treatment and crimped into the ground with hand tools. The study area was then fenced off to keep livestock out.

3.3 Sampling

Measurements on the plots will consist of: 1) percent ground cover and, 2) density of plants by species.

Six sampling quadrats (one meter^2 each) will be randomly assigned to each plot. The same quadrats will be sampled each time so that the same plant population is studied in each sampling.

Percent ground cover within these quadrats will be estimated and the number and species of plants will be counted. Measurements will initially be made at three month intervals, in April, August, and December.

3.4 Statistical Analysis

The six treatments were randomized in three blocks. Analysis of variance will test for differences between treatments. With a split plot analysis of variance, the effects of time on establishment of vegetation will also be tested for.

3.5 Plant Materials

These plots were laid out in the same manner as the Soil Conservation Service test plots at other mill sites. They are adjacent to the other set of plots on Borrow Area A. Each plot is 14 x 3 feet. Conditions of the site are the same as described for the other plots and seeding was done at the same time (12/22/81).

A second set of plots next to these will be seeded in the spring with the same seed.

All plots were hand raked to prepare a seedbed. Seed was then spread by hand as evenly as possible. The plots were then hand raked again to cover the seed.

Measurements on these plots will consist of estimation of percent ground cover and a count of living plants. This will provide an indication of the survivability of these species on this site and the effects (if any) of spring versus fall planting. Obviously, the data obtained from these plots will not be statistically significant, but it will provide useful data for future planting.

The seeds used on these plots were as follows:

SCS Plant Materials Center, Los Lunas, N.M. seed	
Fourwing saltbush, (Aberdeen) (Atriplex canescens)	16.00 lbs/ac
Galleta grass, (Viva) (Hilaria jamesii)	6.00 lbs/ac
Nogal blackgrama (Bouteloua gracilis)	1.00 lbs/ac
Mammoth wildrye, Voluga (Elymus giganteus)	10.00 lbs/ac
A-67 Weeping lovegrass (Eragrostis curvula)	2.00 lbs/ac
Sand dropseed (Sporobolus cryptandrus)	2.00 lbs/ac
Indian ricegrass (Oryzopsis hymenoides)	7.00 lbs/ac
Fourwing saltbush (Atriplex canescens)	16.00 lbs/ac
Smooth brome (Bromus inermis)	2.00 lbs/ac
Shadscale saltbush (Atriplex confertifolia)	16.00 lbs/ac
Douglas rabbitbrush (Chrysothamnus viscidiflorus)	2.00 lbs/ac
Winterfat (Eurotia lanata)	2.00 lbs/ac
Alkalai sacaton (Sporobolus airoides)	2.00 lbs/ac